Dejia Yin

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Birth Date:
March, 18th 1999
Gender: Male
Nationality: Chinese

Education

Ph.D., Environmental Science and Engineering, Tsinghua University (09/2020-10/2025)

Working on Atmospheric Chemical Modeling Advisor: Prof. Shuxiao Wang

Research Scholar, Chemical Engineering Department, Carnegie Mellon University (09/2023-08/2024)

Working on Atmospheric Chemical Box model development Advisor: Prof. Neil Donahue

B.A., Environmental Science, Renmin University of China (09/2016-06/2020)

Professional Experience

Postdoctoral Researcher, Institute for Atmosphere and Earth system research/Helsinki institute of Physics, University of Helsinki (01/2026-)

Working on Atmospheric Chemical Modeling

Honors and Awards

- National scholarship, Ministry of Education of People's Republic of China (2024)
- Excellent undergraduate thesis in environmental major in colleges and universities nationwide, Chinese Society of Environmental Sciences (2020)
- Outstanding undergraduate graduates of Beijing (2020)
- National scholarship, Ministry of Education of People's Republic of China (2019)
- The first class of Excellent Undergraduate Scholarship, Renmin University of China (2018)

Research interest and relevant experience

Atmospheric chemistry box model and 3-D model development; Air pollution source apportionment

- Research on *Simulation of isoprene chemistry in the upper troposphere and their impacts on particle formation* (since January 2026)

  Incorporating the state-of-the-art isoprene chemistry and nucleation mechanisms from CLOUD project into 3-D chemical transport models (e.g. WRF-chem) and investigating their impact on particle formation in a regional scale.

- Research on *Simulation of oxygenated organic molecules (OOMs) and secondary organic particles formation in China* (since March 2021)

  Development of Integrated two-dimensional volatility basis set (I2D-VBS) model to simulate full-volatility oxidation products through first-generational oxidation, irregular radical reactions and multi-generational oxidation of benzene series and monoterpene precursors simultaneously

  Incorporating the I2D-VBS model into 3-D chemical transport model CMAQ (CMAQ/I2D-VBS) to simulate OOMs and SOA formation in China

- Research on *Regional transport characteristics of $PM_{2.5}$ during pollution events in Beijing* (since September 2020)

  Unpacking the regional transport characteristics of $PM_{2.5}$ during pollution events in Beijing during 2018-2021 and the relationship between meteorological field and regional transport characteristics by WRF-CMAQ/ISAM model.

- Other projects:

  Participate in the project "*Development of World-Class Air Quality Standards for Hainan Province*" (2022)

  Work on designing new world-class air quality standards in Hainan province and standards-achieving scenarios, and analyzing the feasibility of new air-quality standards by WRF-CMAQ model.

  Practice in *Institute of Atmospheric Environment Planning Institute, Ministry of Ecology and Environment, PRC*

(June 2022-August 2022)

Work on carbon emission reduction technic route of transportation sectors in China.

Publications

First-author papers:

1. **Yin, D.**; Zhao, B.*; Wang, S.; Donahue, N. M.; Feng, B.; Chang, X.; Chen, Q.; Cheng, X.; Liu, T.; Chan, C. K.; Schervish, M.; Li, Z.; He, Y.; Hao, J., Fostering a Holistic Understanding of the Full Volatility Spectrum of Organic Compounds from Benzene Series Precursors through Mechanistic Modeling. Environmental Science & Technology 2024
2. **Yin, D.**; Song, Q.; Guo, Y.; Jiang, Y.; Dong, Z.; Zhao, B.; Wang, S.*; Gao, D.; Chang, X.; Zheng, H.; Li, S.; Li, Y.; Liu, B., Regional transport characteristics of $PM_{2.5}$ pollution events in Beijing during 2018–2021. Journal of Environmental Sciences 2025

Other papers:

1. Gao, D.; Zhao, B.; Wang, S.; Wang, Y.; Gaudet, B.; Zhu, Y.; Wang, X.; Shen, J.; Li, S.; He, Y.; **Yin, D.**; Dong, Z., Increased importance of aerosol–cloud interactions for surface PM2.5 pollution relative to aerosol–radiation interactions in China with the anthropogenic emission reductions. Atmospheric Chemistry and Physics 2023, 23, (22), 14359-14373.
2. Li, S.; Wang, S.; Wu, Q.; Zhang, Y.; Ouyang, D.; Zheng, H.; Han, L.; Qiu, X.; Wen, Y.; Liu, M.; Jiang, Y.; **Yin, D.**; Liu, K.; Zhao, B.; Zhang, S.; Wu, Y.; Hao, J., Emission trends of air pollutants and CO2 in China from 2005 to 2021. Earth System Science Data 2023, 15, (6), 2279-2294.
3. Li, X.; Ren, J.; Huang, R.; Chen, L.; Li, Y.; Qiao, X.; Cheng, Y.; Zhao, B.; **Yin, D.**; Gao, D.; Sun, Y.; Zhang, F., The Aggravation of Summertime Nocturnal Ozone Pollution in China and Its Potential Impact on the Trend of Nitrate Aerosols. Geophysical Research Letters 2023, 50, (12).
4. Zheng, H.; Chang, X.; Wang, S.; Li, S.; **Yin, D.**; Zhao, B.; Huang, G.; Huang, L.; Jiang, Y.; Dong, Z.; He, Y.; Huang, C.; Xing, J., Trends of Full-Volatility Organic Emissions in China from 2005 to 2019 and Their Organic Aerosol Formation Potentials. Environmental Science & Technology Letters 2023, 10, (2), 137-144.
5. Dong, Z.; Jiang, Y.; Wang, S.; Xing, J.; Ding, D.; Zheng, H.; Wang, H.; Huang, C.; **Yin, D.**; Song, Q.; Zhao, B.; Hao, J., Spatially and Temporally Differentiated NO(x) and VOCs Emission Abatement Could Effectively Gain O(3)-Related Health Benefits. Environ Sci Technol 2024, 58, (22), 9570-9581.
6. Dong, Z.; Li, S.; Jiang, Y.; Wang, S.; Xing, J.; Ding, D.; Zheng, H.; Wang, H.; Huang, C.; **Yin, D.**; Zhao, B.; Hao, J., Health-Oriented Emission Control Strategy of Energy Utilization and Its Co-CO(2) Benefits: A Case Study of the Yangtze River Delta, China. Environ Sci Technol 2024, 58, (28), 12320-12329.
7. He, Y.; Zhao, B.; Wang, S.; Valorso, R.; Chang, X.; **Yin, D.**; Feng, B.; Camredon, M.; Aumont, B.; Dearden, A.; Jathar, S. H.; Shrivastava, M.; Jiang, Z.; Cappa, C. D.; Yee, L. D.; Seinfeld, J. H.; Hao, J.; Donahue, N. M., Formation of secondary organic aerosol from wildfire emissions enhanced by long-time ageing. Nature Geoscience 2024, 17, (2), 124-129.
8. Li, Z.; Zhao, B.; **Yin, D.**; Wang, S.; Qiao, X.; Jiang, J.; Li, Y.; Shen, J.; He, Y.; Chang, X.; Li, X.; Liu, Y.; Li, Y.; Liu, C.; Qi, X.; Chen, L.; Chi, X.; Jiang, Y.; Li, Y.; Wu, J.; Nie, W.; Ding, A., Modeling the Formation of Organic Compounds across Full Volatility Ranges and Their Contribution to Nanoparticle Growth in a Polluted Atmosphere. Environ Sci Technol 2024, 58, (2), 1223-1235.
9. Qu, Q.; Wang, S.; Zhao, B.; Hu, R.; Liang, C.; Zhang, H.; Li, S.; Feng, B.; Hou, X.; **Yin, D.**; Du, J.; Chu, Y.; Zhang, Y.; Wu, Q.; Wen, Y.; Wu, X.; Hu, J.; Zhang, S.; Hao, J., Response of organic aerosol in Beijing to emission reductions during the XXIV Olympic Winter Games. Sci Total Environ 2024, 914, 170033.
10. Song, Q.; Zhang, N.; Zhang, Y.; **Yin, D.**; Hao, J.; Wang, S.; Li, S.; Xu, W.; Yan, W.; Meng, X.; Xu, X.; Wu, X.; Xie, D.; Zhu, Y.; Qu, Q.; Hou, X.; Jiang, Y.; Dong, Z.; Zheng, H.; Sun, Y.; Li, Z.; Zhao, B., The development of local ambient air quality standards: A case study of Hainan Province, China. Eco Environ Health 2024, 3, (1), 11-20.
11. Zheng, H.; Li, S.; Jiang, Y.; Dong, Z.; **Yin, D.**; Zhao, B.; Wu, Q.; Liu, K.; Zhang, S.; Wu, Y.; Wen, Y.; Xing, J.; Henneman, L. R. F.; Kinney, P. L.; Wang, S.; Hao, J., Unpacking the factors contributing to changes in PM(2.5)-associated mortality in China from 2013 to 2019. Environ Int 2024, 184, 108470.

12. Cheng, F.; Li, Z.; Yang, Z.; Li, R.; Wang, D.; Jia, A.; Li, K.; Zhao, B.; Wang, S.; **Yin, D.**; Li, S.; Xue, W.; Cribb, M.; Wei, J., First retrieval of 24-hourly 1-km-resolution gapless surface ozone (O3) from space in China using artificial intelligence: Diurnal variations and implications for air quality and phytotoxicity. Remote Sensing of Environment 2025, 316.
13. Dong, Z.; Wang, S.; Jiang, Y.; Xing, J.; Ding, D.; Zhang, F.; **Yin, D.**; Song, Q.; An, J.; Wang, H.; Huang, C.; Wang, Q.; Zhu, Y.; Zheng, H.; Li, S.; Zhao, B.; Hao, J., A forecasting tool for optimized emission control strategies to achieve short-term air quality attainment. J Environ Manage 2025, 373, 123916.
14. Jiang, Y.; Sun, Y.; Li, S.; **Yin, D.**; Dong, Z.; Zheng, H.; Zhao, B.; Wang, S., Grand challenges of mitigating O(3)-related mortality in China by 2060. Sci Bull (Beijing) 2025.
15. Song, Q.; Huang, L.; Zhang, Y.; Li, Z.; Wang, S.; Zhao, B.; **Yin, D.**; Ma, M.; Li, S.; Liu, B.; Zhu, L.; Chang, X.; Gao, D.; Jiang, Y.; Dong, Z.; Shi, H.; Hao, J., Driving Factors of PM2.5 Pollution Rebound in North China Plain in Early 2023. Environmental Science & Technology Letters 2025, 12, (3), 305-312.
16. Jiang, Y.; Sun, Y.; Li, S.; **Yin, D.**; Ding, D.; Dong, Z.; Zheng, H.; Zhao, B.; Wang, S., Differentiated regional impacts of future meteorological changes and anthropogenic emission control on PM2.5 concentrations in China. Sustainable Horizons 2025, 16.
17. Jia, Y.; Tao, M.; Zhang, H.; Ma, P.; Zhao, B.; Li, R.; **Yin, D.**; Zhang, L.; Huang, H.; Wang, L.; Wang, Y.; Chen, L., Estimating daily NOx and CO2 emissions in typical megacities of east China using TROPOMI NO2 observations. Atmospheric Environment 2025, 359.
18. Li, Z.; Zhao, B.; Li, S.; Shi, Z.; **Yin, D.**; Wu, Q.; Zhang, F.; Yun, X.; Huang, G.; Zhu, Y.; Wang, S., Tracking County-level Cooking Emissions and Their Drivers in China from 1990 to 2021 by Ensemble Machine Learning. Earth Syst. Sci. Data. 2025, 2025, 1-33.
19. Zhang, Y.; **Yin, D**.; Wang, S.; Li, S.; Yuan, B.; Shao, M.; Li, H.; Tan, Q.; Li, Q.; Zhang, Y.; Tang, G.; Zhao, C.; Du, Q.; Zhu, Y.; Li, J.; Zhang, F.; Zhao, B., Comprehensive Evaluation of Simulation Performance of Nonmethane Hydrocarbons (NMHCs) and Oxygenated VOCs in China Using a Three-Dimensional Numerical Model. ACS ES&T Air 2025, 2, (7), 1292-1307.
20. Huang, L.; Zhao, B.; He, Y.; Chang, X.; Ma, M.; **Yin, D.**; Wu, Q.; Wang, S., Global Wildland Fire Emissions of Full-Volatility Organic Compounds from 1997 to 2023. Environmental Science & Technology 2025, 60, (2), 1965-1976.
21. Gao, D.; Qu, C.; Zhao, B.; Wang, S.; Huang, X.; Sun, Y.; Jiang, Y.; Xu, Z.; Wang, X.; He, Y.; Shen, J.; **Yin, D.**; Zheng, H.; Shi, H.; Jiang, Z.; Zeng, X.-W.; Zhu, Y.; Chu, B.; He, H.; Zhang, X.; Zhang, D., Different Carbon Neutrality Strategies Induce Substantially Divergent Health Benefits and Distributional Impacts in China. Environmental Science & Technology 2025, 59, (50), 27517-27529.
22. Dong, Z.; Ke, M.; Wang, S.; Sun, Y.; Zhang, F.; Li, S.; Jiang, Y.; Xing, J.; Ding, D.; Zheng, H.; **Yin, D.**; Zhao, B.; Zhu, Y.; Hao, J., Coordinated Reduction of Reactive Nitrogen and Volatile Organic Compounds Enables Greater and More Equitable Integrated Health and Ecological Benefits. Environmental Science & Technology 2026, 60, (2), 1686-1698.

Other skills

- Professional Skills: WRF-CMAQ(CMAQ/ISAM), WRF-chem
- Computer Languages and Software: shell, ncl, python, matlab, fortran, java, ArcGIS